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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,510	10/12/2001	Wolf-Dietrich Weber	02998.P017	3990

7590 06/10/2004

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Los Angeles, CA 90025-1026

EXAMINER
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NGUYEN, THAN VINH

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 06/10/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Page

# Office Action Summary

Application No.

09/977,510

Applicant(s)

WEBER, WOLF-DIETRICH

Examiner

Than Nguyen

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.



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EXAMINER
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Commissioner for Patents

Than Nguyen  
Examiner  
Art Unit: 2187

Art Unit: 2187

### **DETAILED ACTION**

#### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/30/04 has been entered.

1. Claims 1-20 are pending.
2. In view of the amendment to claims 17,20 to overcome the previous claim objections, these claim objections are withdrawn.

#### ***Response to Amendment/Arguments***

3. Applicant amendment and arguments, filed 3/30/04, are not persuasive to overcome the previous prior art rejection. As to claims Applicant argues that Aref does not teach the limitation of maintaining the issue order of requests within each thread. This limitation is addressed by the Examiner in the claim rejection below. In summary, Aref and Rixner both teach this new limitation of maintaining the issue order of the requests.

#### ***Claim Rejections - 35 USC § 102***

Art Unit: 2187

4. Claims 1-3,9,10,12,18,19 are rejected under 35 U.S.C. 102(b) as being anticipated by Aref et al (USP 6,023,720).

As to claims 1,2,10,12,18:

5. Aref teaches a disk scheduling system. Aref teaches scheduling access to a resource comprising: combining quality of service (QOS) scheduling for processing request threads, that substantially maintains QOS for each thread, and resource scheduling, that substantially maximizes resource efficiency (guaranteeing QOS by efficient resource scheduling; 4/14-64). Aref teaches substantially maintaining QOS for each request thread by maintaining/guaranteeing QOS to the access/read requests (MSFS 12; 4/14-33). Aref teaches resource scheduling to maximize resource efficiency by performing resource/disk scheduling to minimize seek time and guaranteeing data delivery at specified time(4/34-64). Aref teaches maintaining the issue order of the requests (5/50-55, 6/24-35). The read/write request is inserted into the queue, thus maintaining the order of issue/insertion.

As to claim 3,19:

6. Aref teaches the stages are ordered to determine an order of requests to meet QOS guarantees and determine an order of requests for resource efficiency such that if the resource efficiency order satisfies QOS guarantees, a request is scheduled according to a first resource efficiency order, else a request is schedule in accordance with a second resource efficiency order (schedule request based on EDF algorithm to guarantee QOS; 4/5-39).

Art Unit: 2187

7. Claims 1-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Rixner (Memory Access Scheduling, 2000).

As to claims 1,2,10,11,12,18:

8. Rixner teaches combining scheduling of requests and scheduling of request and maintaining order of requests while maintaining QOS scheduling and resource scheduling (memory access scheduler, pg. 2 col 2 - pg. 3 col 1; pg. 4 col 1). Rixner teaches maintaining the order of issue request (pg. 3 col 1, par. 2). The request is satisfied/scheduled in the order of arrival/issued.

As to claim 3,19:

9. Rixner teaches determining an order of requests to meet QOS guarantees (scheduling base on request arrival; pg. 1 col 1; pg. 7 col 2 - pg. 8 col 1);

determining an order of requests for resource efficiency (pick scheduling policy; pg. 4 col 2, Table 1); and

if the resource efficiency order satisfies QOS guarantees, and order is maintained, scheduling a request according to a first resource efficiency order, else scheduling with a second resource efficiency order (pick best scheduling policy; pg. 4 col 2 , Table 1).

As to claims 4-6,13-15:

Art Unit: 2187

10. Rixner teaches maintaining and using a thread scheduling/access history(bandwidth usage), to determine scheduling of threads (use most pending policy schedules access base based on the most demanded row which means that a history is kept of the bandwidth usage to determine which is the most demanded/highest bandwidth; Table 1).

As to claim 7:

11. Rixner teaches maintaining prioritizing threads according to bandwidth usage and sequencing requests (use most priority policy which schedules access base based on the most highest priority operations.; Table 1).

As to claim 8,16:

12. Rixner teaches scheduling based on cost-function scheduling (fewest pending policy which weighs fewest pending and most pending policies to perform access; Table 1).

As to claim 9,17,20:

13. Rixner teaches scheduling for DRAM and deciding which bank to use (memory access scheduling for DRAM; pg. 1 col 2; pg. 3-4).

### *Conclusion*

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Than Nguyen whose telephone number is (703) 305-3866. The examiner can normally be reached on M-F from 8:00 a.m. to 3:00 p.m. EST.

Art Unit: 2187

15. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

16. The fax phone number for Art Unit 2187 is 703-872-9306.



Than Nguyen

Primary Patent Examiner

6/3/04